UNITED STATES PATENT AND TRADEMARK OFFICE

rh

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,819	11/20/2003	Dmitry Potapov	50277-2294	3301

42425   7590   05/02/2007
HICKMAN PALERMO TRUONG & BECKER/ORACLE
2055 GATEWAY PLACE
SUITE 550
SAN JOSE, CA 95110-1089

EXAMINER
ROSE, HELENE ROBERTA

ART UNIT	PAPER NUMBER
2163	

MAIL DATE	DELIVERY MODE
05/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
		10/719,819	POTAPOV ET AL.
Office Action Summary		Examiner	Art Unit
		Helene Rose	2163

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _26 February 2007_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-32 and 34-37_ is/are pending in the application.

    4a) Of the above claim(s) _33_ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-32 and 34-37_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _20 November 2003_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee

set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since

this application is eligible for continued examination under 37 CFR 1.114, and the

fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous

Office action has been withdrawn pursuant to 37 CFR 1.114.

2.   Applicant's submission filed on 2/26/2007 has been entered.

3.   Claims 1, 2, 4, 6, 34-36 have been amended. Claim 33 is cancelled. No claims

have been added. Therefore, claims 1-37 are pending.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine,
> manufacture, or composition of matter, or any new and useful improvement
> thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

5.   Claims 1 and 34 (and its dependencies where applicable) are rejected under

35 U.S.C 101 because the claimed invention is directed to non-statutory subject

matter.

Claims 1 and 34 (and their dependent claims, where applicable) recites a

computer readable medium performing the method, wherein the claims recites a

computer readable medium that includes carrier waves and or/ data signals, which

are not within any of the four statutory categories (see Specification [0076] and

[00080].

Therefore, a medium transmitting or carrying instructions is not considered a

process, machine, manufacture, nor composition of matter, is considered to be

nonstatutory matter.

Claim Rejections – 35 U.S.C – 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically
> disclosed or described as set forth in section 102 of this title, if the differences
> between the subject matter sought to be patented and the prior art are such
> that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said
> subject matter pertains. Patentability shall not be negatived by the manner
> in which the invention was made.

7.   Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Graefe (US Patent No. 6,298,342, Date of Patent: October 2, 2001, hereinafter

Graefe) in view of Agarwal et al (US Patent No. 7,080,081, Date Filed: April 15,

2002, hereinafter Agarwal).

Claim 1:

Regarding claim 1, Graefe teaches a machine implemented method

comprising:

accessing rows in a database table (column 5, lines 61-64, wherein this reads over "the records of the input table are accessed", Graefe), wherein:

each row in the table corresponds to a dimension value combination (Figure 4, all features, wherein the figure is further defined throughout columns 8-9, respectively, Graefe);

a database system defines, for said database table, a dimension column that contains dimension values (Figures 1 and 2, wherein these figures are further defined in columns 4-5 and Figure 4, all features, wherein it illustrates database table, dimension column that contains dimension values, Graefe); and

Graefe does not explicitly specify or simply state "unit of contiguous storage", however, Grafe does teach the functionality of a "contiguous storage" (column 6, lines 12-13, wherein sequencing accesses to the records of stored database tables".

On the other hand, Agarwal does explicitly define and specify, "each row in the table is stored in a unit contiguous storage" (column 2, lines 4-7, wherein this reads over "a data block is created for each dimension of the table, and the blocks store information in a contiguous storage space, Agarwal);

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate Agarwal teachings into Graefe system. A skilled artisan would have been motivated to combine as suggest by Agarwal [column 1, lines 64-65; column 2, lines 6-7; and column 8, lines 51-58] for establishing an

improved method of accessing data more efficiently to improve a system

performance.

a location within a **unit contiguous storage** at which each row is stored is

determined based on the dimension-value combination to which the row

corresponds (column 2, lines 8-11, wherein each block index comprises at least one

key that is associated with a list of block identifiers, wherein the dimensions of the

tables are associated with or more columns of the table; column 5-6, lines 57-67 and

lines 1-27, respectively, wherein this also corresponds to "a location within a **unit**

contiguous storage at which each row is stored is determined based on the

dimension-value combination to which the row corresponds", Agarwal); and

wherein the accessing of the rows also includes, in response to receiving a

request **that indicates** a particular dimension-value combination (column 3, lines

11-12, wherein this reads over "the operation accepts an input table and a pivot

specification and produces an output table, Graefe):

using the particular dimension-value combination for calculating a value that

represents the **unit of contiguous storage** that stores a particular row **that**

corresponds to that particular dimension-value combination row (Figure 4, features

420,440, 450, and 460 and column 12, lines 42-57, wherein using PIVOT (SUM

(Sales) FOR Quarter IN spring, summer, fall, and winter, wherein this query

consolidates sales for East and West regions into a single sum representing the

entire company for each year, which is interpreted to be equivalent to "using the

particular dimension-value combination for calculating a value that represents the

unit of contiguous storage that stores a particular row that corresponds to that

particular dimension-value combination row", Graefe); and

using the value to access the particular row (column 8, lines 51-65, wherein

column 9, lines 35-42, wherein applying the unpivot operation 440 to the pivoted

table 430 restores tables 410, wherein the two columns sales and quarter replace

columns 431-434 and for each row in an input table, the unpivot operation generally

produces one row of an output table per pivoted column, Graefe).

Claim 2:

Regarding claim 2, the combination of Graefe in view of Agarwal teaches

wherein the dimension value combination includes values for one or more

dimensions (Figure 4, diagrams 400, 410, and 430, wherein it illustrates regions

East and West corresponds to the sales by quarter or by spring, summer, fall and

winter which is interpreted to be equivalent to "dimension value combination

includes values for one or more dimensions", Graefe); and

the table does not include columns for storing values for the one or more

dimensions (column 8, lines 61-63, wherein a row in the input table does not appear

in the output if its value does not appear in the pivot list and column 9, lines 1-2,

wherein for output columns not having a corresponding input row, the value is

NULL, Graefe).

Claim 3:

Regarding claim 3, the combination of Grafe in view of Agarwal teaches

wherein said table includes a plurality of segments, and wherein each segment

stores rows for a contiguous range of dimension value combinations (column 6, lines

21-38, respectively, Agarwal).

Claim 4:

Regarding claim 4, the combination of Graefe in view of Agarwal teaches

wherein:

the method further comprising creating an indexed organized table that

includes an entry for each segment in the plurality of segments (column 5, lines 23-

25, wherein DMBS provides services for creating, querying, maintaining and

modifying a number of relational database and column 9, lines 18-20, wherein

inserts the data item values of the values columns into the rows of the output table,

which is interpreted to be "creating an indexed organized table that includes an

entry for each segment in the plurality of segments", Graefe); and

the calculating of a value that represents the block that stores of the

particular row is based in part on information contained in the entry that

corresponds to the segment that contains the particular row (Figure 4, features

420,440, 450, and 460 and column 12, lines 42-57, wherein using PIVOT (SUM

(Sales) FOR Quarter IN spring, summer, fall, and winter, wherein this query

consolidates sales for East and West regions into a single sum representing the

entire company for each year, which is interpreted to be equivalent to "using the particular dimension-value combination for calculating a value that represents the unit of contiguous storage that stores a particular row that corresponds to that particular dimension-value combination row", Graefe).

Claim 5:

Regarding Claim 5, the combination of Graefe in view of Agarwal teaches wherein sizes of the plurality of segments and locations contained within the plurality of segments are allocated according to a density of discontinuities in ranges of dimension value combinations (column 3, lines 50-64, wherein query such as SELECT year, quarter, sales FROM Narrow WHERE sales&lt (SELECT AVG (sales) FROM Narrow) ORDER BY year, quarter specifies the properties of an output table and the columns of the output table correspond to the columns named year, quarter, and sales taken from an input table named Narrow and the output-table rows (records) are to be ordered (i.e., sorted) by year and then by quarter within each year value and the records from the input table which appear in the output are only those where the value of sales is less than the average value of all values of sales in the table named Narrow; and column 11, lines 30-32, wherein SELECT * FROM Narrow.PIVOT (Sales FOR Quarter IN (Spring, Summer, Fall, Winter), which is interpreted to be equivalent to "wherein sizes of the plurality of segments and locations contained within the plurality of segments are allocated

according to a density of discontinuities in ranges of dimension value combinations",

wherein narrow is interpreted to be "density of discontinuities", Graefe)

Claim 6:

Regarding claim 6, the combination of Graefe in view of Agarwal teaches

wherein:

the method further comprising accessing an indexed organized table (IOT)

that includes an entry for each segment in the plurality of segments (REFER to

claim 1, wherein accessing rows in a table and claim 4, wherein indexed organized

table that includes an entry for each segment in plurality of segments have already

been addressed, Graefe); and the calculating of a value that represents the block

that stores the particular row is based in part on information contained in the entry

that corresponds to the segment that contains the particular row (REFER to claim

4, wherein this limitation has already been addressed, Graefe).

Claim 7:

Regarding claim 7, the combination of Graefe in view of Agarwal teaches

wherein the index organized table includes non-key information used for

determining locations of gaps in ranges of dimension value combinations that are

between the segments (column 9, lines 44-49, wherein this reads over "a bit map

covering the pages of the block indicating which pages are empty, e.g., 0 – empty, 1=

empty, Agarwal).

Claim 8:

Regarding claim 8, Agarwal teaches wherein at least one of the plurality of

segments includes more than one contiguous range of dimension value combinations

(Refer to claim 3, wherein this limitation is substantially the same/or similar and

therefore rejected under the same grounds, Agarwal).

Claim 9:

Regarding claim 9, the combination of Graefe in view of Agarwal teaches

wherein at least one of the plurality of segments comprises at least two contiguous

range of dimension value combinations that are joined together by at least one

dummy entry in the table, therein forming one contiguous range of dimension value

combinations (column 11, lines 5-45, wherein this reads over "a new block would be

allocated for table and used to insert the row as cited in lines 38-40, wherein this is

interpreted to be equivalent to "at least one dummy entry in the table, therein

forming one contiguous range of dimension value combinations", Agarwal).

Claim 10:

Regarding claim 10, the combination of Graefe in view of Agarwal teaches

wherein the at least two of the plurality of segments are each divided into blocks

having a block size, and the block size of a first of the at least two of the plurality of

segments is different from the block size of a second of the at least two of the

plurality of segments (column 5, lines 63-67, wherein this reads over "the grid

represents the logical partitioning of the these blocks and each square, such as

square 302, wherein the square corresponds to "plurality of segments", which

represents a logical cell, wherein a column or row in the grid represents a slice for a

particular dimension, wherein this is interpreted to be "wherein the at least two

plurality of segments are each divided into blocks having a block size", Agarwal).

Claim 11:

Regarding claim 11, the combination of Graefe in view of Agarwal teaches

wherein the **indexed organized table** includes an identification of a reference

location for each segment of the plurality of segments from which offsets from the

reference location are calculated to reach other locations in each of the segments

(column 9, lines 9-51, wherein this reads over "each block may have a header,

located in the fist slot of the block's first page which stores a structure, and wherein

each block may also have a free space control record associated with it that could

contain page offsets and approximations of free space per page, wherein this is

interpreted to be equivalent to "**indexed organized table** includes an identification of

a reference location for each segment of the plurality of segments from which offsets

from the reference location are calculated to reach other locations in each of the

segments", Agarwal).

Claim 12:

Regarding claim 12, the combination of Graefe in view of Agarwal teaches

wherein each of the plurality of segments is divided into one or more blocks of equal

size (Refer to claim 10, wherein this limitation is substantially the same/or similar

and therefore rejected under the same grounds).

Claim 13:

Regarding clam 13, the combination of Graefe in view of Agarwal teaches

wherein the accessing of the location of interest is also performed by at least

accessing a table having an identification of a dimension value of a reference

location included in the block from which offsets are calculated to other locations

(column 8, lines 5-19, wherein this reads over "the first two columns in the pivot

specification must be columns in the pivot operation's input table, wherein these

columns will not appear in the pivot operation's output table, and each value in the

pivot list within the pivot specification defines a new column in the pivot operation's

output table and in the input table, elements in the pivot list appear as values in

the pivot column, corresponding values in the value column become values in the

new columns in the output table, Graefe).

Claim 14:

Regarding claim 14, Agarwal teaches wherein the reference location is an

index value of a first of location within a segment that stores rows for a contiguous

range of dimension value combinations (Refer to claim 3, wherein this limitation is

substantially the same/or similar and therefore rejected under the same grounds,

Agarwal).

Claim 15:

Regarding claim 15, the combination of Graefe in view of Agarwal teaches

wherein the table having the identification is a B-tree index (column 5, lines 18-51,

respectively, Agarwal).

Claim 16:

Regarding claim 16, the combination of Graefe in view of Agarwal teaches

wherein the table having the identification is a bit map index (column 2, lines 30-33

and lines 40-45, respectively, Agarwal).

Claim 17-32:

Regarding claims 17-32, the combination of Graefe in view of Agarwal

teaches a computer-readable medium carrying one or more sequences of

instructions, which when executed by one or more processors, causes the one or

more processors to perform (column 4, lines 35-42, respectively, Agarwal).

Claim 34:

Regarding claim 34, Graefe computer-readable medium that is readable by a

database system, having stored therein at least:

a database table containing data items on the computer readable media that

corresponds to locations associated with at least one dimension value (column 5,

lines 61-63, wherein the nested subquery SELECT AVG sales FROM Narrow and

generates a table having only a single row containing the average value of sales in

the Narrow table, Graefe);

a database system defines, for said database table, a dimension column that

contains dimension values (Figures 1 and 2, wherein these figures are further

defined in columns 4-5 and Figure 4, all features, wherein it illustrates database

table, dimension column that contains dimension values, Graefe); and

wherein said database system defines a dimension column for said database

table that contains dimension values (Figure 4, all features, wherein it illustrates a

dimension column for said database table that contain dimension values, Graefe);

Graefe does not explicitly specify or define "units of contiguous storage",

however, Graefe does teach the functionality of an "contiguous storage" (column 6,

lines 12-13, wherein sequencing accesses to the records of stored database tables".

On the other hand, Agarwal does explicitly define and specify that "wherein

the data items are stored in units of contiguous storage in an order dictated by the

dimension values to which the data items correspond (column 7, lines 50-63,

wherein the three dimensional is dimensioned along the year and month dimension

the providence dimension, and the color dimension, wherein the aggregate sales of

the color=red over all dates and regions could be processed and the processing this

query includes ....", Agarwal); and

It would have been obvious to one of the ordinary skill in the art at the time

of the invention to incorporate Agarwal teachings into Graeme system. A skilled

artisan would have been motivated to combine as suggest by Agarwal [column 7,

lines 61-63 and column 8, lines 51-58] for establishing an improved method of

accessing data more efficiently and effectively by narrowing down a search based on

a specific attribute to improve the performance of a system.

wherein the **database** table does not store values for the particular dimension

column (column 8, lines 61-63, wherein a row in the input table does not appear in

the output if its value does not appear in the pivot list and column 9, lines 1-2,

wherein for output columns not having a corresponding input row, the value is

NULL, Graefe).

Claim 35:

Regarding claim 35, the combination of Graefe in view of Agarwal teaches

computer-readable medium teaches wherein all of the locations of the **database**

table that **are associated with** non-null values dimension are organized into one or

more segments, each segment including a contiguous region of data without

discontinuities in the **dimension values** (Figures 7a, 7b, and 7c, all features further

defined in column 8, lines 16-40, respectively, Agarwal).

Claim 36:

Regarding claim 36, the combination of Graefe in view of Agarwal teaches

computer-readable medium teaches wherein the table has associated with it at least

one dimension value combination:

that is associated with a null value, and that is not included in any of the one

or more segments (column 9, lines 39-41, wherein this reads over "a null value in a

pivoted column does not generate an output row", Graefe).

<u>Claim 37:</u>

Regarding claim 37, the combination of Graefe in view of Agarwal teaches wherein the computer-readable medium system also has stored therein at least:

another table storing identifiers for determining the locations stored within each segment of the one or more segments (Figure 4, diagram 430, all features which corresponds to diagram 410 or vice versa, Graefe).

Prior Art of Record

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

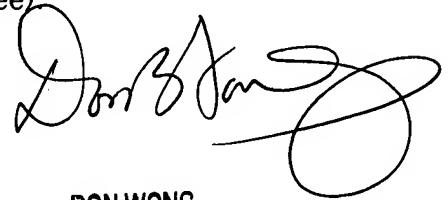|	
Witkowski et al	(US Patent No. 6,457,000)
Agarwal et al	(US Patent No. 7,080,081)
Graefe et al	(US Patent No. 6,298,342)

Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Rose whose telephone number is (571) 272-0749. The examiner can normally be reached on 8:00am - 4:30pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HRR
Technology Center 2100
April 27, 2007

DON WONG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100